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Synthesis, antibacterial and antitumor activity of methylpyridinium salts of pyridoxine functionalized 2-amino-6-sulfanylpyridine-3,5-dicarbonitriles

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Abstract

© 2018, © 2018 Taylor & Francis. A library of 29 2-amino-6-sulfanylpyridine-3,5-dicarbonitriles functionalized with a pyridoxine moiety was synthesized using a three-component one-pot reaction of aldehyde derivative of pyridoxine, malononitrile, and thiophenol. The obtained bipyridine structures were converted into methylpyridinium salts. Several compounds demonstrated expressed antibacterial activity with MICs (minimum inhibitory concentrations) in the range of 0.5–4 μg/mL against the three studied Gram-positive strains and 8–64 μg/mL against the Gram-negative E. coli strain, which was comparable or better than the activity of the reference antimicrobial agents. At the same time, all the synthesized compounds were inactive against the Gram-negative P. aeruginosa. Several compounds also demonstrated high cytotoxic activity against the studied tumor cells, but without selectivity for the normal HSF (human foreskin fibroblast) cells. Despite the preliminary character of the performed biological studies, the obtained results make the obtained structural chemotype a promising starting point for the design of physiologically active compounds.

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Keywords

2-Amino-6-sulfanylpyridine-3,5-dicarbonitriles, antibacterial activity, antitumor activity, pyridoxine, quaternary ammonium salts

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